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# Breastfeeding information in midwifery textbooks in Japan: content analysis with evaluation standards based on Delphi method.

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## ABSTRACT

The purpose of this study was to evaluate breastfeeding information in midwifery textbooks. Evaluation standards were developed in order to perform content analysis. A three-round Delphi method using a panel of 32 midwives resulted in 36 evaluation items from the original 38 draft items based on 4 major international guidelines and statements on breastfeeding. Subsequently, breastfeeding descriptions in 4 midwifery textbooks most frequently used in Japan were examined using a 4-point scale (A, accurate and sufficient; B, accurate but insufficient; C, no description; and D, inaccurate or inconsistent). Among the evaluation items, 40% were rated as A, 25% as C, 21% as B, and 15% as D across the 4 textbooks. In conclusion, a substantial proportion of breastfeeding information in these textbooks was found to be inaccurate, inconsistent, or insufficient in content.

Key words: breastfeeding, textbook, content analysis, Delphi method

## INTRODUCTION

Many previous studies have indicated that with the exception of children with congenital metabolic disorders, breastfeeding is a proper method of nourishment for almost all children and contributes to improved maternal and child health.<sup>1</sup> In 2005, the Japanese Ministry of Health, Labor and Welfare carried out a large-scale survey on infant nutrition.<sup>2</sup> According to this survey, 96% of pregnant women living in Japan have a desire to breastfeed; however, the rate of breastfeeding one month after childbirth is only 42%, indicative of a gap between desire and reality. Some have pointed out the lack of breastfeeding knowledge and skills among medical professionals as one of the impediments to breastfeeding.<sup>3-6</sup> In 2007, only

1% of facilities were accredited with Japan's "Baby-friendly hospital" status (48 of 3,320 facilities).<sup>7</sup>

In Japan, mothers and infants usually remain in the hospital for 5 to 7 days after delivery. During this period, a large portion of postpartum care by midwives constitutes breastfeeding care. This suggests that appropriate knowledge of breastfeeding should be acquired at an early stage (i.e., during undergraduate education) and that the contents of textbooks used during this period are likely to play an important role in knowledge acquisition. Despite this, the contents of midwifery textbooks in Japan have not been evaluated previously.

When previous investigators compared textbooks used to educate pediatricians and nurses in the United States with international statements and guidelines agreed upon by experts, it was found that some entries on breastfeeding in textbooks contained inaccurate or inconsistent information.<sup>8, 9</sup> However, criteria used for evaluation were based on the consensus of a research team; thus some bias is unavoidable. Although those evaluation standards were based on international statements and guidelines, it is not clear whether their contents should necessarily be included in textbooks used for basic knowledge acquisition by medical professionals. Another study was conducted in Australia on the subject of breastfeeding in midwifery textbooks but only provided limited findings on early skin contact between a mother and child and first-time breastfeeding.<sup>10</sup> To the best of our knowledge, there are no evaluation standards nor have there been any studies on breastfeeding information in textbooks for medical professionals in Japan.

The objectives of this study were as follows. Focusing on pregraduation education that affects basic knowledge acquisition, we sought to develop standards to evaluate breastfeeding information in textbooks. Our goal was to use these standards to evaluate breastfeeding information in major textbooks used in Japanese midwifery education.

## METHODS

### Selection of Target Textbooks

We selected midwifery textbooks written in Japanese that describe care during pregnancy, delivery, and postpartum and neonatal periods as our targets. To be included, the latest editions needed to be published after 2000. We excluded textbooks targeting physicians and nurses as well as specialized books that address only certain aspects of midwifery care. Using the 3 methods described below, we identified books frequently used in Japanese midwifery schools (Figure 1). First, using the 2008 Web syllabi of 45 midwifery training programs (out of 140) that had accessible Web syllabi, we identified all books designated as textbooks or reference books. We then counted the number of schools that were using each book. To select books used at high-frequency, we excluded those that were not listed by at least 20% of the 45 schools. Next, using NACSIS Webcat (a Japanese bibliographic catalogue search database system) and the search terms *josangaku* or *josanfugaku* (both of which mean midwifery) on June 23, 2009, we identified books and counted the number of midwifery training schools that carried each book. In addition to collecting this information available on the Web, we asked 4 experts in midwifery education (a midwifery professor, an assistant professor in a nursing college, and a teacher and a former teacher in midwifery training schools) about popular midwifery textbooks regardless of the actually textbook they were using. Target textbooks were obtained using these 3 methods. Each multi-volume textbook was counted as 1 book.

To establish standards to evaluate breastfeeding information (referred to as “evaluation standards” hereafter), we first created a list of candidates for evaluation standards based on international statements and guidelines. Second, we decided on items that would make up the standards (“evaluation items”). Third, we selected subitems, criteria used to judge each evaluation item. Finally, we evaluated target textbooks using the standards developed (Figure 2). The research design was content analysis of midwifery textbooks. The analysis used the evaluation standards developed using Delphi method survey questionnaires and a panel of 3 midwives. The research period was from June 2009 to January 2010.

### **Candidates for Evaluation Standards**

Given that the oldest among the 4 target midwifery textbooks was revised in 2002, we chose international statements and guidelines published before 2000, which influenced breastfeeding care.<sup>1, 11-13</sup> We extracted descriptions relevant to breastfeeding and categorized recurring items into groups from these statements and guidelines. Each of the large categories became an evaluation item candidate. Candidates for subitems were chosen based on the description of each evaluation item in these guidelines. Two members of our research team checked the appropriateness of the extraction of descriptions as well as their grouping and wording.

### **Determination of Evaluation Items**

In the Delphi method, experts are given the same questionnaires multiple times, each time receiving anonymous results from the previous round, and are asked to reconsider their previous answers.<sup>14, 15</sup> It is a method designed to produce converging opinions with the aim of gaining a consensus. Survey participants should be those who would be most affected by

results of the survey.<sup>15</sup> Therefore we chose to survey midwives themselves, who are most closely connected to midwifery textbooks. We selected multiple institutions for participation (2 tertiary hospitals, 5 secondary hospitals, 2 clinics, 6 local communities, 3 nursing colleges). Setting the upper limit at 4 midwives per institution, we sampled a total of 32 midwives. Our inclusion criteria was that midwives had to have at least 3 years of experience in midwifery and breastfeeding care. We excluded those who had been away from clinical practice or midwifery education for over 3 years.

Using individual surveys sent by mail, we asked participants to return the questionnaires anonymously to the main authors' laboratory. We also sent a reminder to all participants 1 week after the deadline.

For each evaluation item candidate, we used a 9-point Likert scale ranging from 1(Not necessarily needed to be described in textbooks) to 9 (Must be described in textbooks). We also added a comment section to each evaluation item candidate. With the next round of survey questionnaires, we sent back summary results including comments and urged participants to reconsider their responses. Participants were asked to answer the same questionnaire after reconsideration. We carried out 3 rounds of this process in an attempt to bring opinions together.

We decided on the following prior to the survey. Survey opinions would be presumed converged after 3 rounds of questionnaires. If, after the third survey round, a given evaluation item candidate received ratings of 7 to 9 on the Likert scale from at least three-quarters of respondents, it would be included as an evaluation item that should be described in textbooks.

This study was approved by the Ethics Committee of the Kyoto University Graduate School of Medicine and Faculty of Medicine (E-711). To obtain informed consent, we verbally

explained to participants that return of questionnaires would be considered as consent to participate; this was also clearly stated on the survey questionnaire.

### **Determination of Judgment Criteria for Evaluation Items**

To judge whether a given evaluation item was sufficiently described in a textbook, we determined the criterion for each item before evaluating the target textbooks as follows. First, we sent written material to a panel of 3 midwives (1 assistant professor at a nursing college and 2 of our research team members). Each independently decided priorities of subitems and judgment criteria for a sufficient rating. A consensus meeting was held after rating. If there was a consensus in their opinions, the criteria were determined as such. If there were discrepancies, they were resolved by discussion to reach a consensus. The cutoff for a “sufficient” rating is different for each evaluation item. These cutoffs were determined a priori by the expert panel.

### **Evaluation of Target Textbooks Using Evaluation Standards**

Two examiners (either M.K with K.M or M.K with E.K) independently examined each book using our evaluation standards. They determined whether each subitem was included, and they rated whether the description was sufficient and accurate. Then, they calculated the number of described subitems, and rated each evaluation item as A, B, C, or D. After individual evaluation, the 2 examiners’ results were combined and, in case of a disagreement, a consensus was reached through discussion. If a consensus could not be reached, an assistant professor (midwifery) in a nursing college, who was not a member of this research team, determined the result (M.F). Each evaluation item was assigned 1 of the 4 codes: A, accurate and sufficient description; B, accurate but not sufficient description; C, no

description; D, inaccurate or inconsistent description. Together with these evaluations, descriptions of corresponding sections were also transcribed in order to analyze the context if a D rating was made.

## RESULTS

### Number of Candidates for Evaluation Items

From the 4 international breastfeeding guidelines and statements,<sup>1, 11-13</sup> we extracted 95 descriptions as candidates for our evaluation items. Grouping duplicate contents together resulted in a total of 39 candidates at last. One of the candidates, “addition of iron, vitamin D, and fluoride to infants” was removed because iron is already added to Japanese artificial milk, vitamin D is not an issues in Japanese public health, and supplementary fluoride is not recommended in Japan.

The Delphi method was carried out with the resulting 38 candidates.

### Determination of Evaluation Items

The number of respondents to the questionnaire survey was 31 (97%) for the first round, 30 (94%) for the second round, and 29 (91%) for the third round. Respondents of the first round had 3 to 29 years of midwifery experience (mean  $\pm$  standard deviation,  $11.3 \pm 7.8$ ). Midwifery education was distributed as follows: midwifery training school, 20(65%); midwifery major in junior college, 7(23%); college and university, 3(10%); and graduate school, 1(3%). Approximately one- third work at general hospitals, one-third as midwives based in and serving local communities as employees of clinics or perinatal medical centers, or as teaching staff in educational institutions; each group constituted between 10% and 23% of respondents.



Table 1 shows convergence results of each round of the questionnaire survey. After the first round, there were 9 candidate items (items 2, 3, 5, 6, 8, 11, 25, 26, and 32), for which responses of three-quarters or more of respondents did not converge at ratings of 7 to 9 on the Likert Scale. But after the third round of survey, there were only 2 such items: “3: Medical personnel’s knowledge and skills about breastfeeding” and “26: Artificial nipples or pacifiers during the breastfeeding period.” We removed items 3 and 26 from the candidate list and adopted the remaining 36 items as those that should be described in textbooks.

### Determination of Criteria to Judge Evaluation Items

For criteria to judge whether a particular evaluation item is sufficiently described in a textbook, we relied on the number of sub-items whose descriptions were indeed present in the textbook relative to the total number of sub-items in a category (Table 2, column b, “Criterion for A-rating”).

### Evaluation of Target Textbooks Using Evaluation Standards

**Textbook selection and overview.** At the 45 midwifery training schools with accessible Web syllabi, a total of 188 books were designated as textbooks or reference books (Figure 1). Among those, 4 books (referred to as “Text1” to “Text4”) satisfied our inclusion criteria. Of the 118 books identified through NACSIS Webcat with the keywords *josangaku* or *josanfugaku* (both meaning “midwifery”), books that satisfied our inclusion criteria were the same as the 4 identified from Web syllabi. According to the opinions of midwifery education experts, many midwifery training schools use Text 1<sup>16</sup> and Text 2<sup>17, 18</sup> as their main textbooks, while Text 3<sup>19</sup> and Text 4<sup>20</sup> are used as supplementary materials. These 3 methods results in the selection of the same four textbooks. Text 1 and Text 2 are multivolume books.

**Results of evaluation of textbooks and description contents.** The average number of evaluation items across all 4 textbooks that received each of the A-D ratings were as follows (Figure 3): A, accurate and sufficient description = 14.3 items out of 36 (40%; range, 5-19); B, accurate but insufficient description = 7.5 items (21%; range, 4-11); C, no description = 9.0 items (25%; range, 4-20); D, inaccurate or inconsistent description = 5.3 items (15%; range, 3-8).

When we evaluated each textbook separately (Figure 3), Text1 had 19 items (53%) that received A ratings (accurate and sufficient), which was the highest number among the 4 texts; however, it had 8 items (22%) with D ratings (inaccurate or inconsistent), also the highest number among the textbooks. Text 2 had 18 A ratings (50%), and 6 D ratings (17%). Text 3 had the smallest number of D ratings among the 4 textbooks (3, 8%), but the combined number of B and C ratings (insufficient + no description) in this book was 18 (50%). Text 4 had the smallest number of A ratings among the 4 textbooks (5, 14%), 4 D ratings (11%), and 27 B and C ratings (75%).

We looked at contents that triggered a D rating because of “inaccurate description.” In Text 2, one such description is: “Even in developed countries, bottle-fed children are... more susceptible to learning disabilities [than breast-fed children].” There is no such statement in any of the systematic reviews or meta-analyses of studies on mother’s milk and artificial formula.<sup>21, 22</sup> Also, in explaining contraindications to breastfeeding, the textbook refers to “breast abnormalities, hyperthyroidism, diabetes,... etc.” However, there is no evidence that these conditions contraindicate breastfeeding.<sup>23, 24</sup> While explaining birth-control techniques during breastfeeding, Text 1 states, “Since the pill is said to reduce the amount of lactation, it should be used only after 3 months following childbirth.” However, the birth control pill prescribed in Japan contains estrogen; therefore, according to Japanese obstetrics and

gynecology guidelines,<sup>25</sup> breastfeeding is considered to contraindicate oral administration of the pill even after 3 months postpartum.

We also examined what were considered “inconsistent descriptions” (D rating). Text 1 states, “During the first 6 months, fruit juice, water, or other foods are unnecessary.” But it also mentions breastfeeding “in combination with baby food as a weaning diet (from 3 to 4 months after birth),” thus lacking consistency within the same text. Also, this textbook states that mothers should “not limit the time; allow the child to drink both foremilk and hindmilk sufficiently (feed the child until he/she is satisfied and releases the breast).” On another page, however, our examiners found inconsistent descriptions such as “2 to 3 minutes at each breast, alternating the left and right breasts in 3 to 3 rounds,” and “do not exceed 10 to 15 minutes at 1 breast.” Text 3 contains a description of “breastfeeding exclusively for the first 6 months”; however, it also suggests “giving fruit juice from about 2 months after birth, and soup from about 3 months after birth,” resulting in contradictory information. On the timing of breastfeeding, Text 3 mentions that “when (the child) cries, it is a sign that breastfeeding is late,” but also states that “in principle, feed when the child cries.” These 2 statements are inconsistent with each other. In Text4, there is a description of “frequent feeding (more than 8 to 12 times a day),” while on another page, the same textbook mentions “feeding frequency: 3 to 4 hours between sessions, 6 to 8 sessions/day,” which contradicts the norm of frequent feeding. Moreover, this textbook recommends “breastfeeding within 30 minutes after childbirth.” But it also includes a mention of “(Initial breastfeeding) at the time when initial nausea settles,” implying that feeding may be performed several hours after childbirth, which is inconsistent with its own earlier recommendation.

## DISCUSSION

We found that breastfeeding information in Japanese midwifery textbooks frequently used in Japan was quite insufficient both in quality and quantity based on recent international guidelines and statements.

Philipp et al<sup>9</sup> has examined breastfeeding information found in English-language textbooks designed for pediatricians and nurses. The results indicated that among 7 pediatrics textbooks evaluated, 50% of overall evaluation items were accurately and sufficiently described (corresponding to an “A rating” in the present study). That percentage was 59% overall among 6 textbooks directed to nurses. In our study, the percentage of A-rated items was 40% for Japanese midwifery textbooks. Description of the timing of initial breastfeeding was found to be one of the inconsistent items in both studies. Although our evaluation standards are different from Philipp et al, a similar trend is seen in textbooks for pediatricians and nurses in the United States and those for midwives in Japan.

Based on international guidelines and statements, Philipp et al created evaluation standards using 15 and 20 items that were results of a consensus among research team members. However, even within international guidelines and statements, some of the content is based on slim evidence. Also, some of the contents are too advanced to serve as basic educational material and should be learned through practical experience. Thus, the question remains as to whether all of these items should necessarily be described in textbooks used for the basic education of professionals. Meanwhile, bias tends to be greater if evaluation standards are decided solely based on the consensus of research team members. In this study, our evaluation standards were also based on international guidelines and statements. However, given the reason mentioned above, we employed Delphi methodology and selected evaluation items that midwives agreed should be described in their textbooks. Criteria for

judging each evaluation item are spelled out in the form of 1 or more sub-items, which are the constituting elements of that item. An evaluation item was judged “sufficiently described” if the specified fraction (established a priori) of constituent sub-items were described in a textbooks.

Kuhn<sup>26</sup> considered specialty textbooks as an aid to understand the common orientation, methods, and theories in that field.” Thus, we compared evaluation standards of this study to standard questions appearing on Japan’s national midwife licensing examination.<sup>27, 28</sup> Items corresponding to 28 of our 36 evaluation items appeared in question standards for the national examination. Most of the evaluation items that received D ratings (inaccurate or inconsistent) in this study are among the questions appearing on the national examination (10/12 evaluation items). Students are greatly influenced by textbooks, which represent the first system of professional knowledge they encounter in pre-graduation education. Inaccurate or insufficient breastfeeding information in textbooks could affect the knowledge of midwives as well as students.

There are 2 reasons for why we used Delphi methodology. First, if we tried to reach a common understanding using a method like nominal group discussion,<sup>29</sup> the opinions of many midwives could possibly be swayed by those of influential midwives. We considered the Delphi method to be more appropriate, because it enables feedback of opinions while maintaining anonymity. Second, as our participants work at many different institutions, it was difficult for all to meet at one place. The mail survey used by the Delphi method was feasible in terms of time, location, and cost.

This investigation has 2 limitations. First, in the Delphi method, one’s initial rating is subject to change based only on the ratings of other coparticipants as reference.<sup>14, 29</sup> Therefore, the strength of consensus tends to be weaker than that achieved by a nominal

group,<sup>30</sup> in which members exchange their opinions and reasons behind them, not just the ratings. However, we provided a comment column and sent the comments, in addition to the ratings, back to each participant. In this way, we facilitated the exchange of opinions to compensate for that shortcoming. In addition, it has been pointed out that shortcomings of the Delphi method could be compensated for by increasing the sampling to more than the typical 8 to 12 members found in nominal groups.<sup>15</sup> As such, we arranged to have more (32) participants in this study. A second limitation is that opinions about breastfeeding vary depending on the group a midwife belongs to. It is therefore possible that convergence results might differ from one group of midwives to another. However, it has been indicated that having various midwife groups from multiple institutions would be desirable, because it allows one to sample a broader range of opinions than is possible within a single midwife group.<sup>14, 31</sup> Midwives' understanding of breastfeeding care is influenced by policies of their institution of employment, so we recruited participants for the Delphi survey from multiple institutions.

The number of subitems was different for each evaluation items. Moreover, the number of items that should be given priority is was also different. Accordingly, we set criteria in order to assess to what extent the contents were described for each evaluation item. The criteria were determined before collecting data through a discussion panel composed of a group of experts ( M.F, E.K , and M.K) to avoid post hoc considerations.

The evaluation standards used in this study were conformed to international guidelines and statements published before 2000, because the oldest of the 4 target textbooks was revised in 2002. However, given that new textbooks have been published since 2000, it will be necessary to revisit the standards presented herein based on new information. Furthermore, a discussion on the inclusion of background medical knowledge, such as anatomical physiology and mastitis care, would be useful. Rather than being limited to the

present research objective of evaluating textbook contents, such efforts are likely to contribute to improvements in undergraduate and continuing education for midwives.

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**Table 1.** Convergence results via Delphi method. Percentage of respondents giving a Likert Scale rating of 7 to 9

	Item (Keywords)	Round 1	Round 2	Round 3
		(%)	(%)	(%)
1	The preferred feeding	97	94	93
2	In-house breastfeeding policies	68	73	87
3	Medical personnel's knowledge and skills about breastfeeding	55	58	72
4	Support for deciding on nursing method	94	97	100
5	Appropriate education materials to be provided to parents	68	77	87
6	Marketing of breast milk substitutes	48	57	76
7	Exclusive breastfeeding for six months after birth	81	80	76
8	Breastfeeding more than one year after birth	58	80	76
9	Benefits of breastfeeding (infant)	100	100	100
10	Benefits of breastfeeding (mother)	97	100	100
11	Benefits of breastfeeding (other)	71	87	93
12	Contraindications to breastfeeding	94	100	97
13	Risk factors of breastfeeding (infant)	84	93	97
14	Risk factors of breastfeeding (mother)	84	100	100
15	Rooming-in	97	93	97
16	Early breastfeeding	100	100	100
17	Feeding on demand and frequent breastfeeding	97	100	100
18	Proper breastfeeding positioning	94	100	100
19	Proper latching	94	100	100
20	Normal excretion pattern for infant	81	93	100
21	Normal patterns of weight loss and gain in infant	94	100	100
22	Signs of effective breastfeeding (infant; other than weight change and excretion)	90	100	100
23	Signs of effective breastfeeding (mother)	84	93	97
24	Assistance in case of ineffective breastfeeding	87	93	93
25	No supplements without medical justification	68	70	83
26	Artificial nipples or pacifiers during breastfeeding	65	53	62
27	Assistance when supplements are medically necessary	90	90	97
28	Assistance during mother- infant separation and difficulties in direct	97	100	100

	breastfeeding			
29	Nipple problems	97	100	100
30	Breast engorgement	90	100	100
31	Perception of insufficient milk supply	90	97	100
32	Observation, evaluation, and recording of breastfeeding status	61	73	79
33	Continual support for breastfeeding	90	97	100
34	How to cope with crying infant	90	97	97
35	Mother's diet	94	93	97
36	Mother's working and time away from the baby	81	87	90
37	Contraception during breastfeeding	81	87	90
38	Social implications	84	87	97

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**Table 2.** Summary of evaluation items, sub-items, their evaluation criteria, and evaluation results of target textbooks

No	Evaluation items <sup>a</sup> (Keywords)	Sub-items (keywords)	b Criterion for A- rating	Evaluation result			
				Text 1	Text 2	Text 3	Text 4
1	The preferred feeding	- Breast milk is the preferred feeding for all infants with rare exceptions	1/1	A	A	A	A
2	In-house breastfeeding policies	- Unify institutional policies - Have written policies - Maintain institutional environment	3/3	B	B	B	C
3	Medical personnel's knowledge and skills about breastfeeding	- All concerned medical personnel should acquire the knowledge and skills about breastfeeding	1/1	-	-	-	-
4	Support for deciding on nursing method	- Provide information to parents throughout perinatal period. - Accurate and adequate information - The final decision is to be made by mother. - Explanation matching the parents' ability to comprehend. - Cultural considerations.	3/5	A	A	B	C
5	Appropriate education materials to be provided to parents	- Accurate and adequate - Suited to literacy capabilities - Cultural considerations - No commercial advertisement - List of social resources for breastfeeding support in the community	4/5	C	C	C	C
6	Marketing of breast milk substitutes	- Content of "International Code of Marketing of Breast-milk Substitutes"	1/1	C	A	A	C
7	Exclusive breastfeeding for six months after birth	- Normal growth and development by exclusive breastfeeding for six months after birth. - No need for water, juice and other foods for six months after birth	2/2	D	D	D	C
8	Breastfeeding more than one	- Breastfeeding for at least one year after birth	2/2	D	B	B	C

	year after birth	- After one year, up to the mother's discretion to continue					
9	Benefits of breastfeeding (infant)	<ul style="list-style-type: none"> <li>- Decrease of diarrhea and infectious diseases</li> <li>- Prevention of SIDS</li> <li>- Prevention of diabetes</li> <li>- Decrease of other chronic diseases</li> <li>- Enhanced mother-infant interactions</li> </ul>	3/5	A	D	A	B
10	Benefits of breastfeeding (mother)	<ul style="list-style-type: none"> <li>- Decrease of postpartum hemorrhaging by promoting involution of the uterus</li> <li>- Decrease body weight</li> <li>- Birth spacing (suppression of ovulation)</li> <li>- Decrease of breast cancer and ovarian cancer</li> <li>- Enhanced mother-infant interaction</li> </ul>	3/5	A	B	A	B
11	Benefits of breastfeeding (other)	<ul style="list-style-type: none"> <li>- Saving of the cost of purchasing infant formula</li> <li>- Decrease of health care costs</li> </ul>	1/2	A	C	A	C
12	Contraindications to breastfeeding	<ul style="list-style-type: none"> <li>- Congenital metabolic disorders (infant)</li> <li>- Specific infectious diseases (HIV, Untreated active tuberculosis) (mother)</li> <li>- Radiation therapy, chemotherapy(mother)</li> <li>- Taking drugs incompatible with breastfeeding (mother)</li> <li>- Illegal drugs (mother)</li> </ul>	3/5	A	D	A	B
13	Risk factors of breastfeeding (infant)	<ul style="list-style-type: none"> <li>- Birth intervention</li> <li>- Other than full-term birth</li> <li>- Persistent sleepiness</li> <li>- Infant susceptible to irritation</li> <li>- Hyperbilirubinemia</li> <li>- Low blood sugar</li> <li>- SGA, LGA, IUGR</li> <li>- Tight frenulum</li> <li>- Multiple birth</li> <li>- Diseases</li> <li>- Morphological abnormality</li> <li>- Chromosomal abnormality</li> </ul>	7/12	A	A	B	B
14	Risk factors of breastfeeding	<ul style="list-style-type: none"> <li>- Motivation of breastfeeding</li> <li>- Overall physical condition after birth</li> </ul>	5/7	A	A	B	A

	(mother)	<ul style="list-style-type: none"> <li>- Shape, size of nipple and areola</li> <li>- Problems related to nipple, areola, breast</li> <li>- Development of mammary gland</li> <li>- Drugs</li> <li>- Diseases and surgeries related to milk production</li> </ul>					
15	Rooming-in	<ul style="list-style-type: none"> <li>- Rooming-in</li> <li>- Place for routine inspection and examination of children</li> </ul>	1/2	D	A	A	C
16	Early breastfeeding	<ul style="list-style-type: none"> <li>- Early breastfeeding within 30 min to 2 hr after birth</li> <li>- Delay unnecessary procedures until early breastfeeding</li> </ul>	1/2	A	D	A	D
17	Feeding on demand and frequent breastfeeding	<ul style="list-style-type: none"> <li>- Feeding on demand</li> <li>- Frequent breastfeeding (at least 8 times a day)</li> <li>- Nurse on early feeding cues (crying: a late feeding cue)</li> <li>- Wake up and feed an infant who tends to sleep</li> <li>- Feed until an infant is satisfied and releases the breast</li> <li>- It is OK if a child is satisfied with only one breast</li> </ul>	4/6	D	D	D	D
18	Proper breastfeeding positioning	<ul style="list-style-type: none"> <li>- Child held at breast-height</li> <li>- Child faces a breast with head and body in straight line</li> <li>- Variations (horizontal, side, vertical hold)</li> <li>- Explain with figures</li> </ul>	4/4	A	B	B	C
19	Proper latching	<ul style="list-style-type: none"> <li>- Wide opened mouth</li> <li>- Lips spreading outward</li> <li>- Nose and cheek, lower jaw touch breast or nearly touch it</li> <li>- Explain with figures</li> </ul>	4/4	A	B	B	C
20	Normal excretion pattern for infant	<ul style="list-style-type: none"> <li>- Frequency of urinations</li> <li>- Frequency of defecations</li> <li>- appearance of urinations and defecations</li> </ul>	2/3	A	A	B	A
21	Normal patterns of weight loss	<ul style="list-style-type: none"> <li>- Physiological loss of body weight</li> </ul>	3/5	D	A	D	D

	and gain in infant	<ul style="list-style-type: none"> <li>- Rule of thumb for weight increase</li> <li>- Time when weight loss settles down</li> <li>- Time when weight begins to increase</li> <li>- Time when weight returns to birth weight</li> </ul>					
22	Signs of effective breastfeeding (child; other than weight and excretion)	<ul style="list-style-type: none"> <li>- Rhythmic sucking, swallowing pattern</li> <li>- Swallowing noise</li> <li>- Arms and hands relaxed</li> <li>- Moist mouth</li> <li>- Child not irritated, relaxed</li> </ul>	3/5	B	A	C	B
23	Signs of effective breastfeeding (mother)	<ul style="list-style-type: none"> <li>- Thirst</li> <li>- Uterine contraction during or after breastfeeding</li> <li>- Lactogenic sensation</li> <li>- Relaxed state and sleepiness</li> <li>- Breast softening while breastfeeding</li> <li>- Lack of shape change, bruising, pain in nipples after feeding</li> <li>- Change of breast size and weight</li> </ul>	5/7	A	B	C	B
24	Assistance in case of ineffective breastfeeding	<ul style="list-style-type: none"> <li>- Re-evaluation of breastfeeding techniques</li> <li>- Sucking stimulation</li> <li>- Breast milk pumping</li> <li>- Consideration of other nourishment methods if medically indicated</li> <li>- Delay discharge</li> <li>- Introduction to breastfeeding experts</li> <li>- Appointment for follow-up</li> </ul>	4/7	B	B	C	C
25	No supplements without medical justification	<ul style="list-style-type: none"> <li>- Do not use any supplements other than breast milk unless there is medical justification</li> </ul>	1/1	D	D	A	A
26	Artificial nipples or pacifiers during breastfeeding	<ul style="list-style-type: none"> <li>- Do not give artificial nipples or pacifiers to infant during breastfeeding, unless medically indicated</li> </ul>	1/1	-	-	-	-
27	Assistance when supplements are medically necessary	<ul style="list-style-type: none"> <li>- When medically necessary, use supplements</li> <li>- First choice is expressed breast milk</li> <li>- How to avoid nipple troubles</li> <li>- Determine the amount of supplements based on infant age (number of days) and weight</li> </ul>	3/5	A	A	A	C

		- Prevent mother's loss of self-confidence					
28	Assistance at the time of mother-child separation and with difficulties in direct breastfeeding	<ul style="list-style-type: none"> <li>- Do direct breastfeeding if possible, use expressed milk if not possible</li> <li>- Techniques to pump and store breast milk</li> <li>- Methods to maintain lactation</li> <li>- Comparison of the benefits of breast milk and the risks of infant formula</li> </ul>	3/4	A	A	B	C
29	Nipple problems	<ul style="list-style-type: none"> <li>- Causes (breastfeeding positions and latching; fungal or bacterial infections)</li> <li>- Remedies</li> </ul>	2/2	A	A	B	A
30	Breast engorgement	<ul style="list-style-type: none"> <li>- Prone to occur two to five days after childbirth</li> <li>- Do not warm when lactation is bad</li> <li>- Effective frequent breastfeeding</li> <li>- Remedies other than frequent breastfeeding</li> </ul>	3/4	B	A	B	D
31	Perception of insufficient of milk supply	<ul style="list-style-type: none"> <li>- Decrease in breast tension does not mean decrease in lactation</li> <li>- Occurs during infant's rapid growth or with frequent breastfeeding</li> <li>- There is no lack of lactation as long as infant's excretion and weight increase are normal</li> </ul>	2/3	A	A	A	C
32	Observation, evaluation, recording of breastfeeding status	<ul style="list-style-type: none"> <li>- Observation, recording, evaluation for breastfeeding performance by staff</li> <li>- Recording of infant's excretion and nursing of infant by mother</li> </ul>	2/2	C	C	C	C
33	Continual support	<ul style="list-style-type: none"> <li>- Follow-up until appropriate time</li> <li>- Understanding of regional breastfeeding resources</li> <li>- Introduction of mother to breastfeeding support group</li> <li>- Breastfeeding education also to family members</li> </ul>	3/4	A	A	A	B
34	How to cope with crying infant	<ul style="list-style-type: none"> <li>- Do not ignore crying child</li> <li>- Try soothing child before breastfeeding if child is not showing hunger signs</li> </ul>	2/2	C	C	A	C
35	Mother's diet	<ul style="list-style-type: none"> <li>- Diet restriction almost entirely unnecessary</li> <li>- Balanced diet</li> </ul>	2/3	D	A	C	C

		- Drink appropriate amount of water					
36	Mother's working and outgo	- Schedule nursing according to mother's activities	1/2	A	A	A	C
		- Feed expressed breast milk					
37	Contraception during breastfeeding	- Breastfeeding, ovulation, and menstruation	3/4	D	A	A	C
		- Contraception that can be used					
		- Contraception requiring caution when used					
		- Contraception that should not be used					
38	Social implications	- Encourage routine health insurance coverage for breastfeeding services	2/4	C	B	C	C
		- Improve media portrayal					
		- Making breastfeeding education routine in professional training					
		- Improve the environment for breastfeeding					

a, Item number and evaluation items are the same as in Table 3. Items 3 and 26 were removed by the Delphi method and their results are therefore blank.

b, Criteria to judge whether the corresponding evaluation item is sufficiently described. It is based on the fraction of sub-items that are described. For example in 16: Early breastfeeding, the item is judged to be sufficiently described when at least one of the two sub-items is described.

c, A: sufficiently and accurately described; B: accurate but not sufficient; C: no description; D: inaccurate or inconsistent





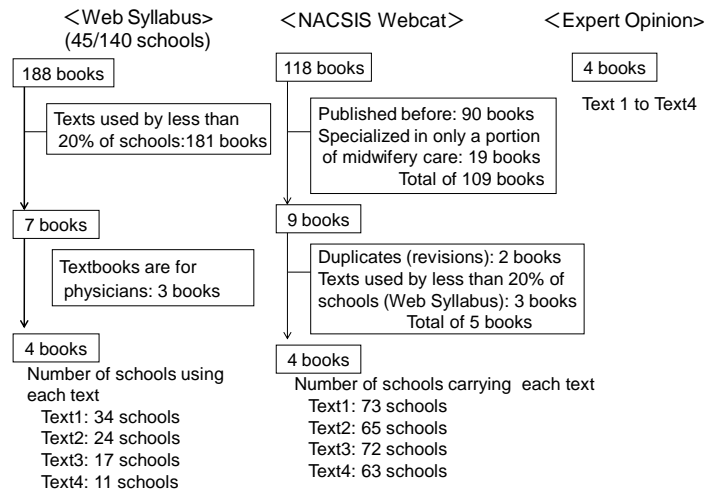


Figure 1. Process of selecting target midwifery textbooks

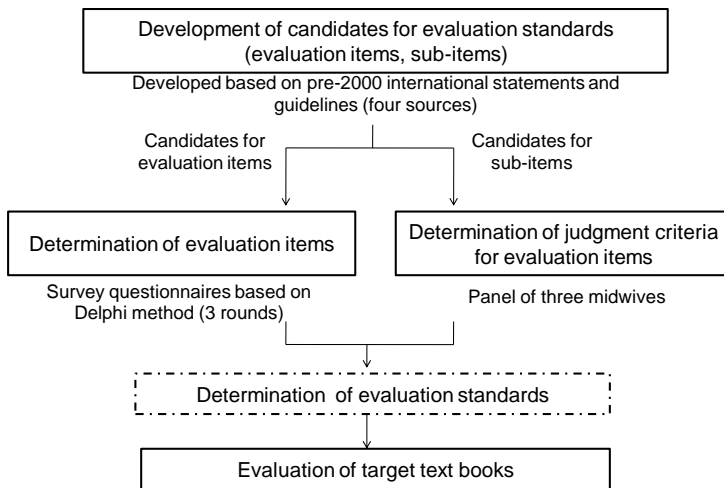


Figure 2. Process flow

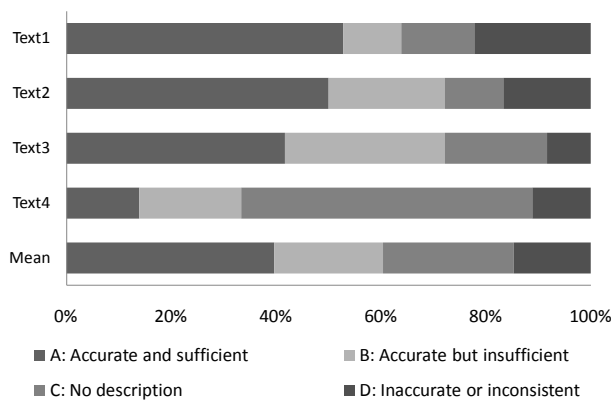


Figure3. Percentage of evaluation items with each rating category for four target textbooks